Amendments to and Listing of the Claims

Please cancel claims 1-6, 11, 12, 18-22, 25-32, 40-52 and 54, without prejudice, and amend claims 37-39, 55 and 56, without prejudice, as set forth in the following listing of the claims, which replaces all prior listings of the claims:

1-6. (Cancelled)

7. (Previously Presented) An isolated polynucleotide comprising a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence encoding the amino acid sequence represented by SEQ ID NO:1;

(b) a nucleotide sequence encoding an amino acid sequence of a protein involved in a G protein-coupled receptor mediated signal transduction, wherein said protein has an ability to mediate a signal transduction from a dopamine D1 receptor or an adenosine A2a receptor to an adenylate cyclase, and wherein said amino acid sequence has a homology of 85% or more with the amino acid sequence of SEQ ID NO:1, and retains amino acid sequences represented by amino acid residues 119 to 133, 287 to 292, 353 to 359, and 428 to 435 in the amino acid sequence of SEQ ID NO:1;

(c) a nucleotide sequence encoding the amino acid sequence represented by SEQ ID NO:25;

(d) a nucleotide sequence encoding the amino acid sequence represented by SEQ ID NO:26;

(e) the nucleotide sequence represented by SEQ ID NO:2;

(f) the nucleotide sequence represented by SEQ ID NO:27; and

(g) the nucleotide sequence represented by SEQ ID NO:28.

8. (Previously Presented) A polynucleotide consisting of the nucleotide sequence represented by SEQ ID NO:2.

9. (Previously Presented) A polynucleotide consisting of the nucleotide sequence represented by SEQ ID NO:27.

10. (Previously Presented) A polynucleotide consisting of the nucleotide sequence represented by SEQ ID NO:28.

11. (Cancelled)

12. (Cancelled)

13. (Previously Presented) A recombinant vector containing a polynucleotide according to claim 7.

14. (Previously Presented) A method for producing a recombinant vector comprising a step for integrating a polynucleotide according to claim 7 into a vector capable of being replicated in a host cell.

15. (Original) A transformant having a recombinant vector according to claim 13.

16. (Previously Presented) A method for producing a transformant comprising a step for transducing a recombinant vector according to claim 13 into an isolated host cell.

17. (Previously Presented) A method for producing a G protein α-subunit comprising culturing a transformant having a recombinant vector containing a polynucleotide according to claim 7 and recovering from the culture a protein resulting from the polynucleotide according to claim 7.

18-22. (Cancelled)

23. (Previously Presented) An agent for regulating a G protein-coupled receptor mediated signal transduction containing as an active ingredient a polynucleotide according to claim 7.

24-32. (Cancelled)

33. (Previously Presented) A method for screening for a substance capable of regulating a signal transduction mediated by a G protein-coupled receptor and a G protein comprising:

(a) bringing a test substance into contact with a test cell having a recombinant vector according to claim 13 and a recombinant vector containing a DNA encoding a G protein-coupled receptor protein;

(b) measuring G protein effector activity or an index value correlating therewith in the test cell; and

(c) comparing this effector activity or the index value correlating therewith with effector activity or an index value correlating therewith in a test cell which has not been brought into contact with the test substance, to thereby select a test substance capable of altering the effector activity or the index value correlating therewith in the test cell.

34. (Previously Presented) A method for screening for a substance capable of regulating a signal transduction mediated by a G protein-coupled receptor and a G protein comprising:

(a) bringing a test substance into contact with a test cell having a recombinant vector according to claim 13 and a recombinant vector containing a DNA encoding a G protein-coupled receptor protein;

(b) measuring G protein effector activity or an index value correlating therewith in the test cell; and

(c) comparing this effector activity with effector activity or an index value correlating therewith when the test substance has been brought into contact with a control cell having no recombinant vector according to claim 13 but having a recombinant vector containing a DNA encoding a G protein-coupled receptor protein, to thereby select a test substance causing a difference in the effector activity or the index value correlating therewith between the test cell and the control cell.

35. (Previously Presented) A method for screening for a substance capable of regulating a signal transduction mediated by a G protein-coupled receptor and a G protein comprising:

(a) bringing a test substance into contact with a test cell having a recombinant vector according to claim 13 and a recombinant vector containing a DNA encoding a G protein-coupled receptor protein;

(b) measuring G protein effector activity or an index value correlating therewith in the test cell; and

(c) comparing this effector activity or the index value correlating therewith with effector activity or an index value correlating therewith when the test substance has been brought into contact with a control cell having no recombinant vector containing a DNA encoding a G protein-coupled receptor protein but having a recombinant vector according to claim 13, to thereby select a test substance causing a difference in the effector activity or the index value correlating therewith between the test cell and the control cell.

36. (Previously Presented) A method for screening for a substance capable of regulating a signal transduction mediated by a G protein-coupled receptor and a G protein comprising:

(a) bringing a test substance and a G protein-coupled receptor ligand into contact with a test cell having a recombinant vector according to claim 13 and a recombinant vector containing a DNA encoding a G protein-coupled receptor protein;

(b) measuring G protein effector activity or an index value correlating therewith in the test cell; and

(c) comparing this effector activity or the index value correlating therewith with effector activity or an index value correlating therewith in a test cell which has not been brought into contact with the test substance but has been brought into contact with the ligand, to thereby select a test substance capable of altering the effector activity or the index value correlating therewith in the test cell.

37. (Currently Amended) A method for screening for a substance capable of regulating a signal transduction mediated by a G protein-coupled receptor and a G protein comprising:

(a) bringing a test substance and a G protein-coupled receptor ligand into contact with a test cell having a recombinant vector according to claim 13 and a recombinant vector containing a DNA encoding a G protein-coupled receptor protein;

(b) measuring G protein effector activity or an index value correlating therewith in the test cell;

(c) comparing this effector activity with effector activity in a test cell which has not been brought into contact with the test substance but has been brought into contact with the ligand, whereby investigating change in the effector activity in the test cell; and

(d) ~~for~~ comparing a rate of change in this effector activity or the index value correlating therewith with a rate of change in effector activity or an index value correlating therewith when the test substance and the ligand has been brought into contact with a control cell having no recombinant vector containing a DNA encoding a G protein-coupled receptor protein but having a recombinant vector according to claim 13, to thereby select a test substance causing a difference in the rate of change in the effector activity or the index value correlating therewith between the test cell and the control cell.

38. (Currently Amended) A method for screening for a substance capable of regulating a signal transduction mediated by a G protein-coupled receptor and a G protein comprising:

(a) culturing a transformant having a recombinant vector containing a polynucleotide according to claim 7 and preparing from the cultured transformant a cell membrane fraction that contains a protein encoded by the polynucleotide according to claim 7;

(b) bringing a test substance into contact with the cell membrane fraction prepared in (a) and a cell membrane fraction of a cell having a recombinant vector containing a DNA encoding a ~~GPCR~~ G protein-coupled receptor;

(c) assaying a level of the binding of GTP to the cell membrane fractions; and

(d) comparing the assayed level of this GTP binding with an assayed level of GTP binding to cell membrane fractions which have not been brought into contact with the test substance, to thereby select a test substance capable of altering the assayed level of the GTP binding to the cell membrane fractions.

39. (Currently Amended) A method for screening for a substance capable of regulating a signal transduction mediated by a G protein-coupled receptor and a G protein comprising:

(a) culturing a transformant having a recombinant vector containing a polynucleotide according to claim 7 and preparing from the cultured transformant a cell membrane fraction that contains a protein encoded by the polynucleotide according to claim 7;

(b) bringing a test substance and a G protein-coupled receptor ligand into contact with the cell membrane fraction prepared in (a) and a cell membrane fraction of a cell having a recombinant vector containing a DNA encoding a ~~GPCR~~ G protein-coupled receptor;

(c) assaying a level of binding of GTP to the cell membrane fractions; and

(d) comparing the assayed level of GTP binding from (c) with an assayed level of GTP binding to cell membrane fractions which have not been brought into contact with the test substance but have been brought into contact with the ligand, to thereby select a test substance capable of altering the assayed level of the GTP binding to the cell membrane fractions.

40-54. (Cancelled)

55. (Currently Amended) A method for screening for a substance capable of regulating a signal transduction mediated by a G protein-coupled receptor and a G protein comprising:

(a) culturing a transformant having a recombinant vector containing a polynucleotide according to claim 7 and a recombinant vector containing a polynucleotide encoding a ~~GPCR~~ G protein-coupled receptor, and preparing from the cultured transformant a cell membrane fraction that contains a protein encoded by the polynucleotide according to claim 7 and the ~~GPCR~~ G protein-coupled receptor;

(b) bringing a test substance into contact with the cell membrane fraction prepared in (a);

(c) assaying a level of binding of GTP to the cell membrane fraction; and

(d) comparing the level of binding of GTP assayed from (c) with a level of binding of GTP to a cell membrane fraction which has not been brought into contact with the test

substance, to whereby select a test substance capable of altering the level of binding of GTP to the cell membrane fraction.

56. (Currently Amended) A method for screening for a substance capable of regulating a signal transduction mediated by a G protein-coupled receptor and a G protein comprising:

(a) culturing a transformant having a recombinant vector containing a polynucleotide according to claim 7 and a recombinant vector containing a polynucleotide encoding a ~~GPCR~~ G protein-coupled receptor, and preparing from the cultured transformant a cell membrane fraction that contains a protein encoded by the polynucleotide according to claim 7 and the ~~GPCR~~ G protein-coupled receptor;

(b) bringing a test substance and a G protein-coupled receptor ligand into contact with the cell membrane fraction prepared in (a);

(c) assaying a level of binding of GTP to the cell membrane fraction; and

(d) comparing the level of binding of GTP assayed from (c) with a level of binding of GTP to a cell membrane fraction prepared which has not been brought into contact with the test substance but has been brought into contact with the ligand, to whereby select a test substance capable of altering the level of binding of GTP to the cell membrane fraction.